

A B S T R A C T

The invention provides a method of synthesizing a Si/C/N/E_a/F_b/G_c/O multielement nanopowder that is directly suitable for sintering, E, F, and G representing three distinct metallic elements other than Si, and at least one of a, b, and c being non-zero. The nanopowder is obtained by laser pyrolysis of an aerosol comprising at least one metal precursor, hexamethyldisilazane Si₂C₆NH₁₉, used as the sole solvent for said at least one metal precursor, and silane SiH₄. Each grain of the resulting nanopowder contains all of the elements Si, C, N, E_a, F_b, G_c, and O, and the chemical composition of the nanopowder in terms of equivalent stoichiometric compounds is such that its free carbon content is less than 2% by weight and its SiO₂ content is less than 10% by weight. The use of this nanopowder for fabricating a Si₃N₄/SiC composite ceramic.